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New Zealand Agricultural &
Resource Economics Society (Inc.)

Allocation and cost sharing in agricultural greenhouse gas markets

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Paper presented at the 2013 NZARES Conference
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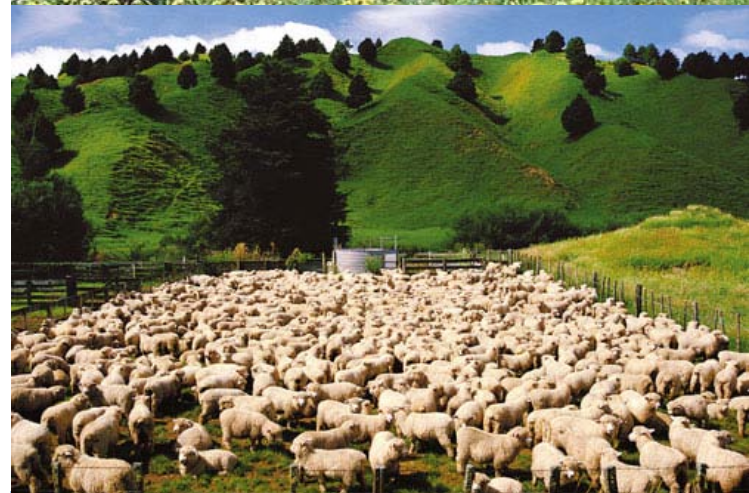
TAX

Allocation and cost sharing in agricultural greenhouse gas markets

A synthesis of Motu work

*Suzi Kerr, Motu
(and Levi Timar, GNS)*

*NZARE, Lincoln
August, 2013*



What do we know about GHG cost incidence and how to address it with free allocation?

Pathways for incidence

Evidence on incidence

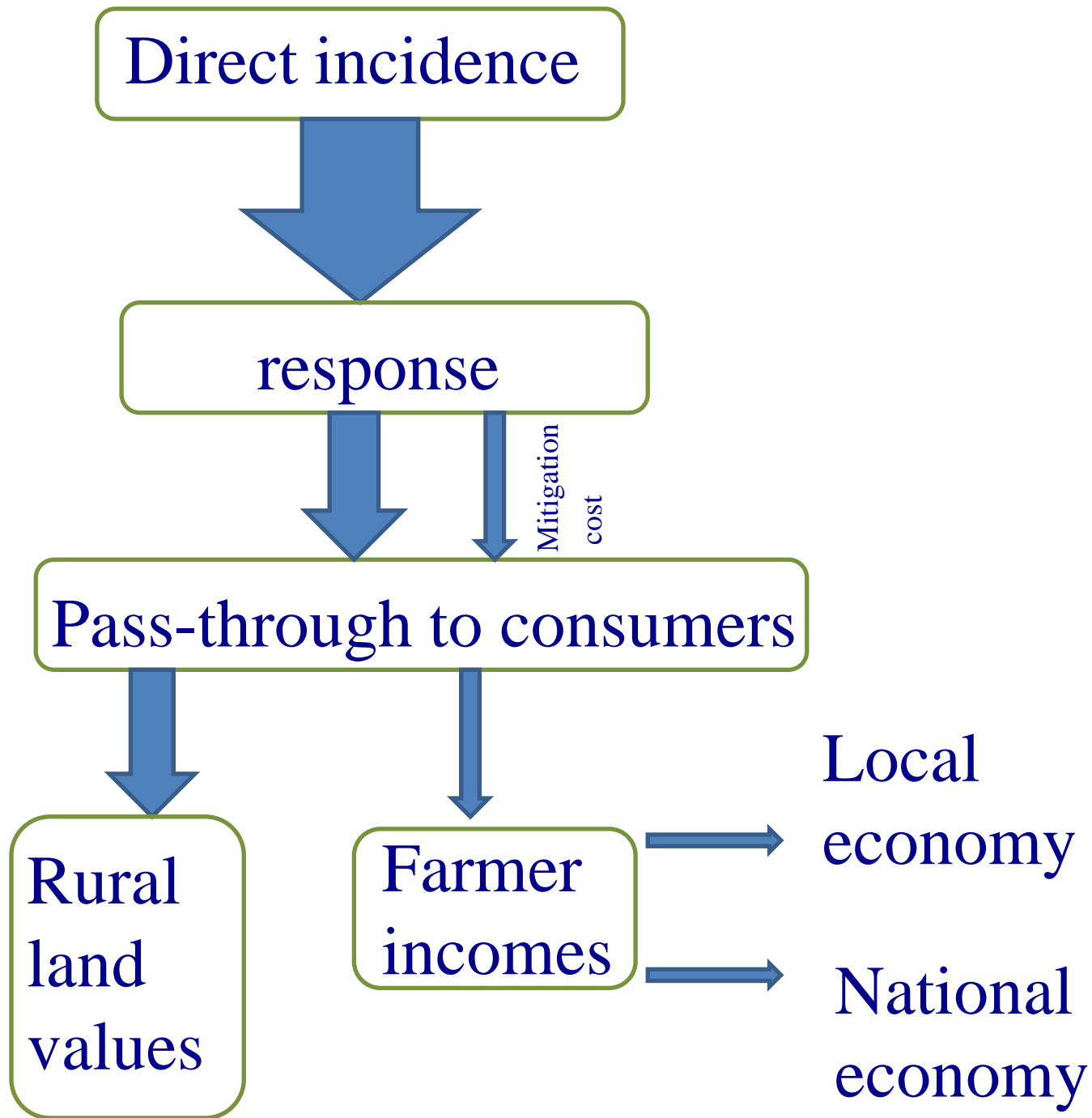
So what?

Illustrative case study of free allocation (two mechanisms) using LURNZ

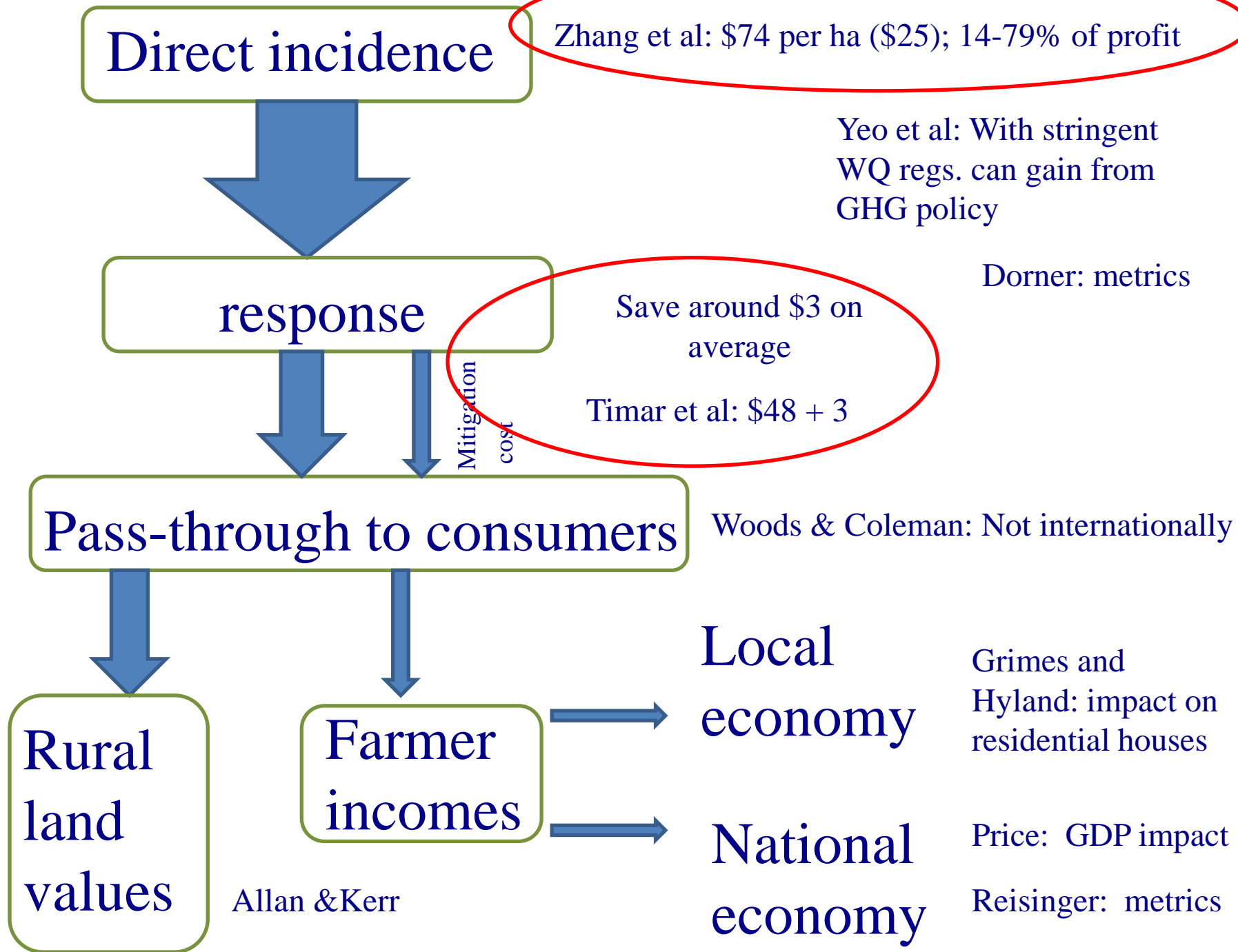
Effects of sheep/beef farm heterogeneity



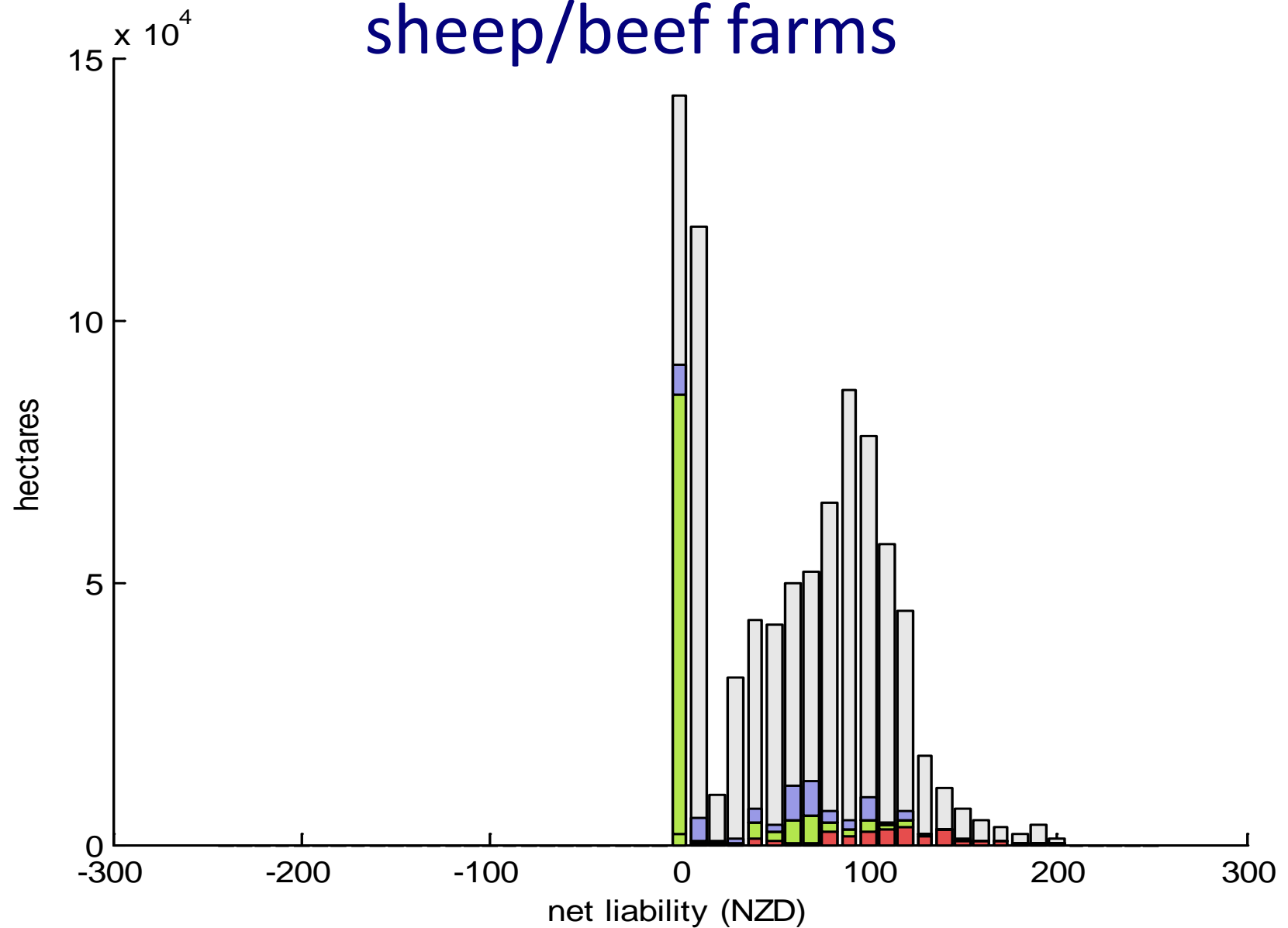
Pathways for incidence



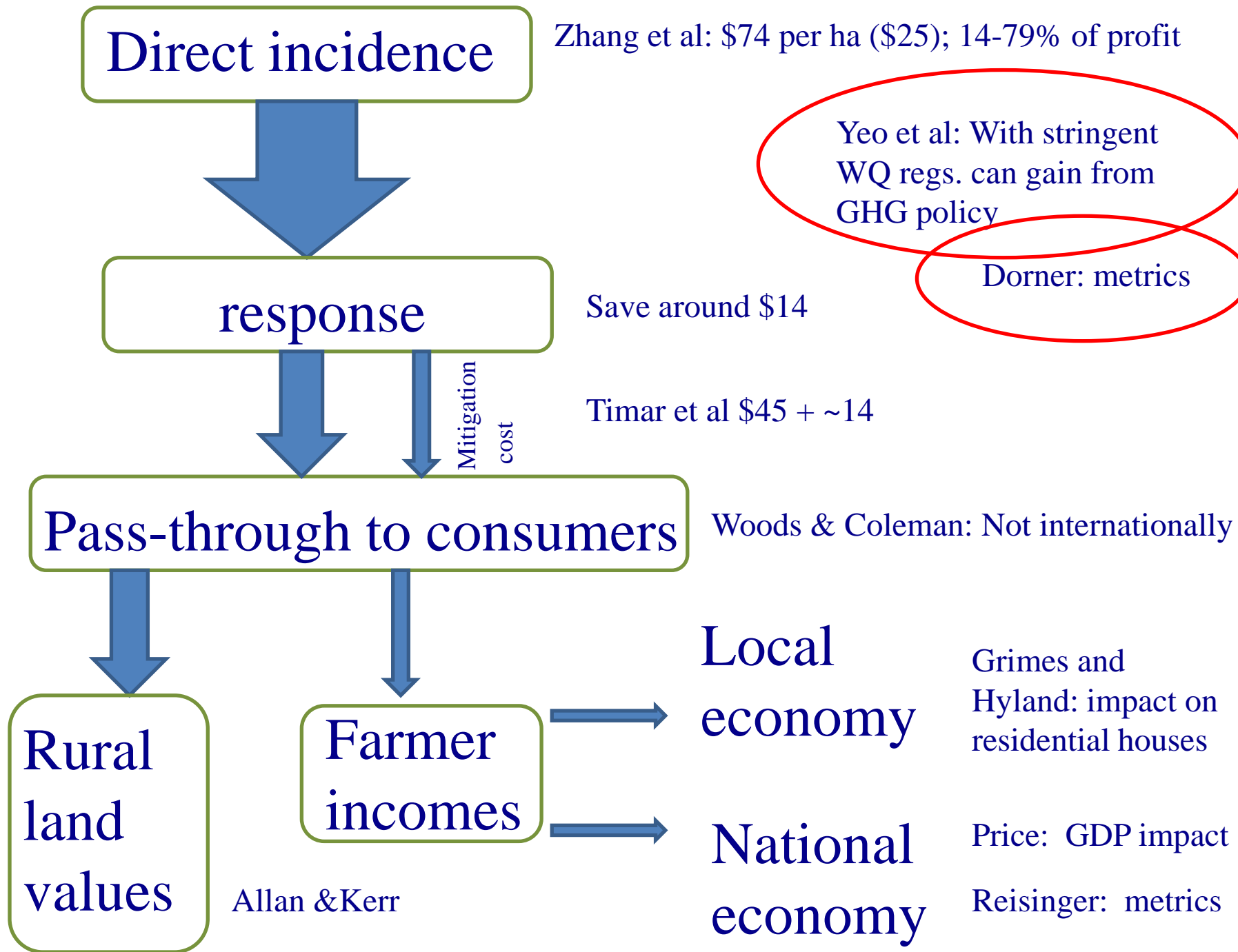
Sheep/beef farmers



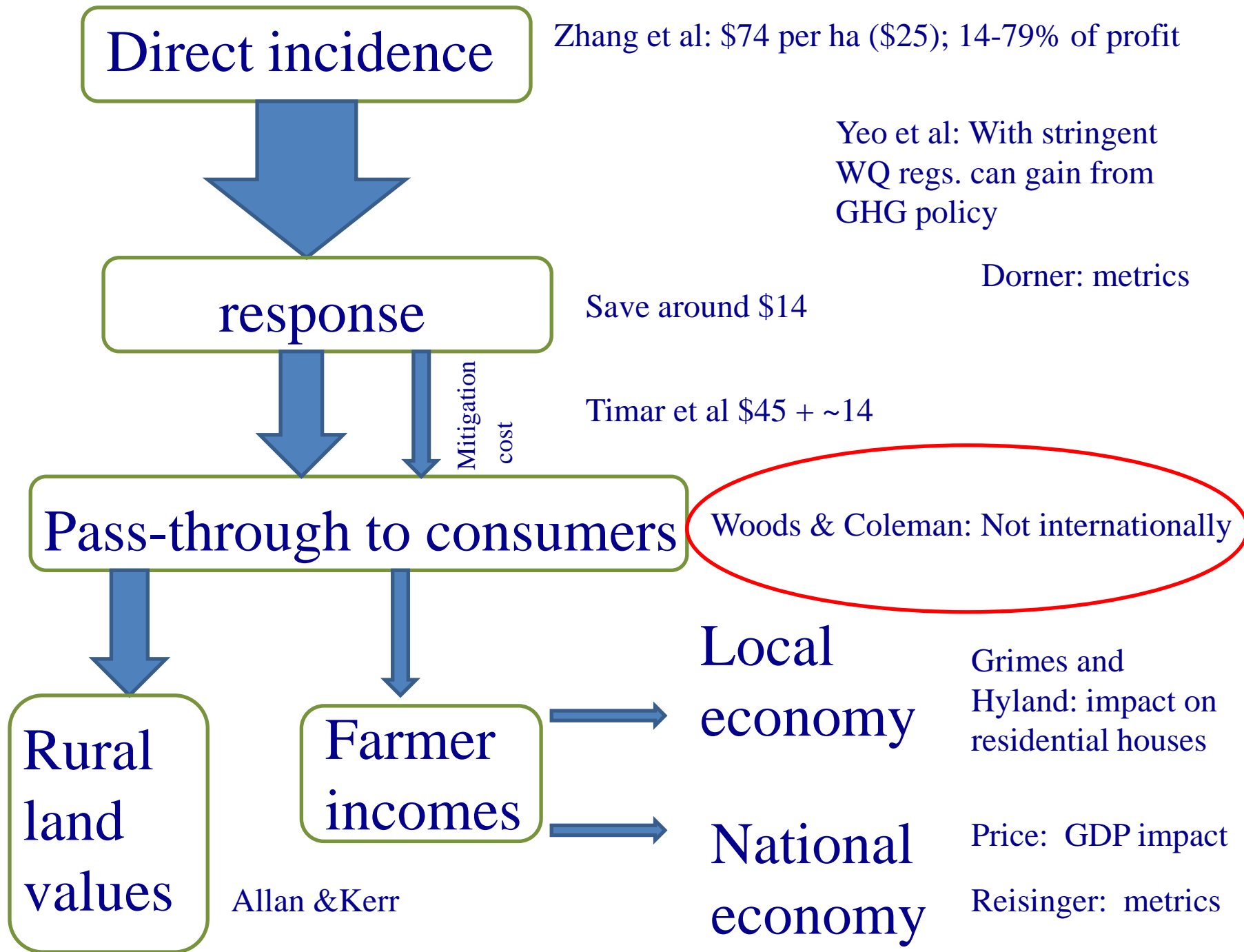
Wide range of impacts per ha on sheep/beef farms



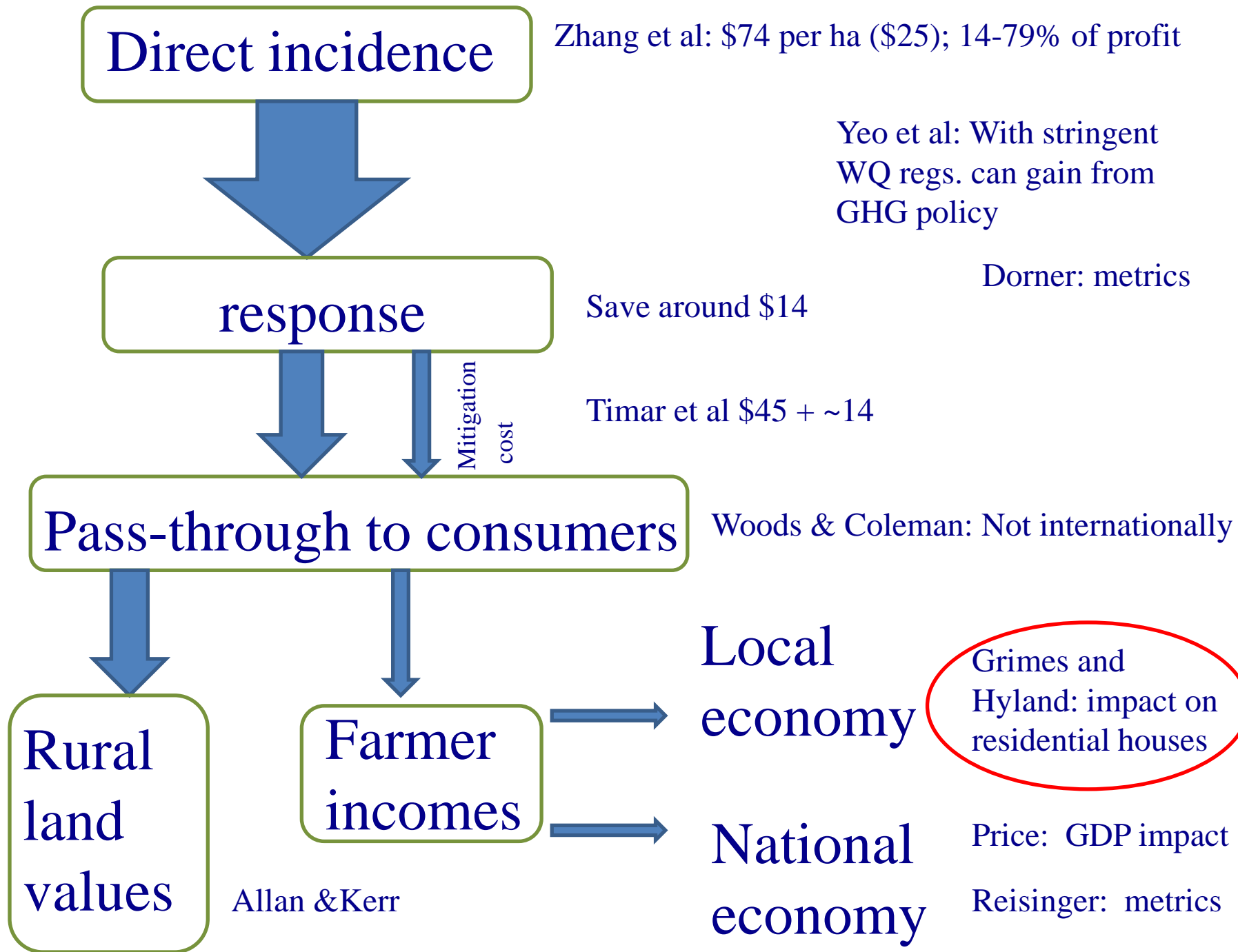
Sheep/beef farmers



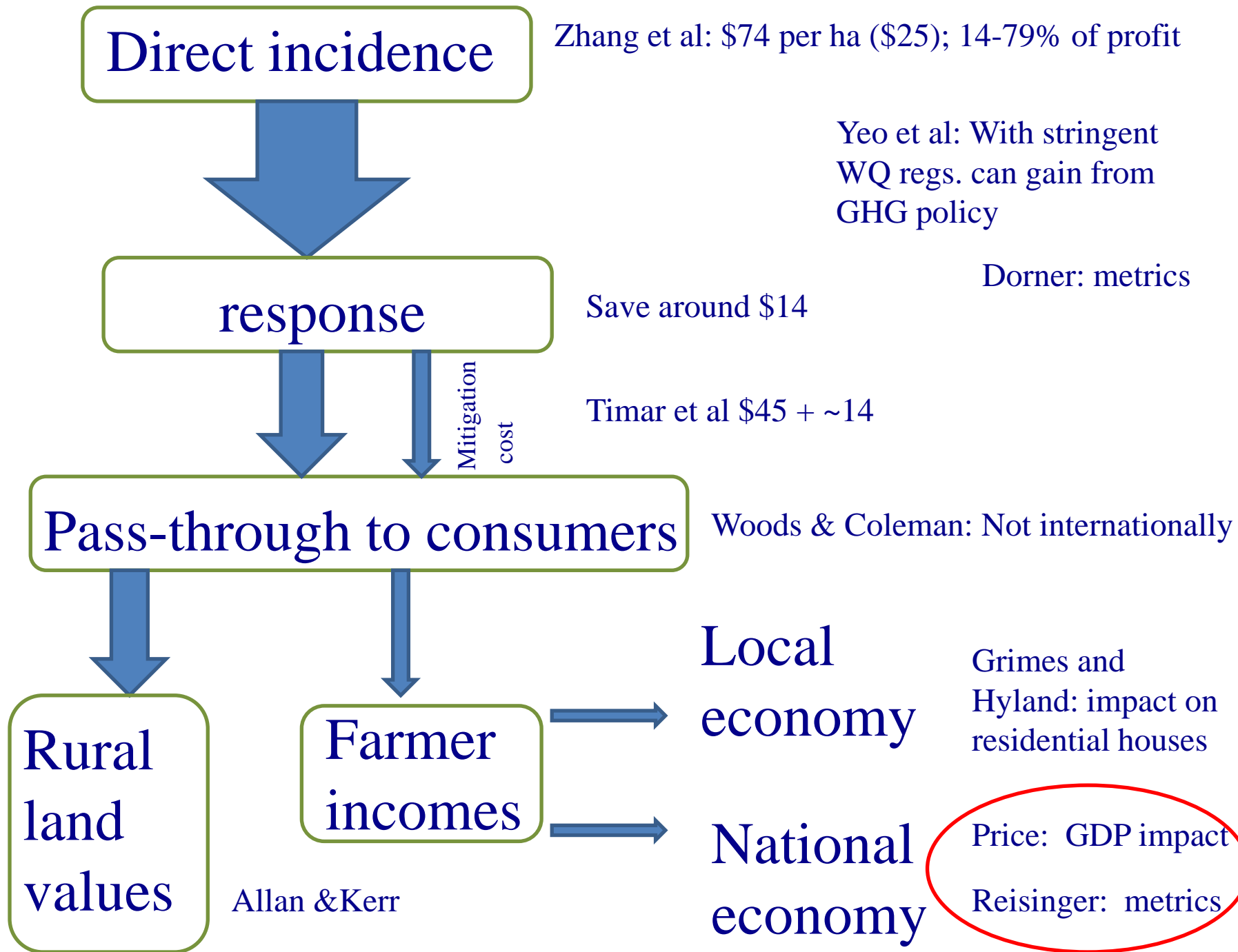
Sheep/beef farmers



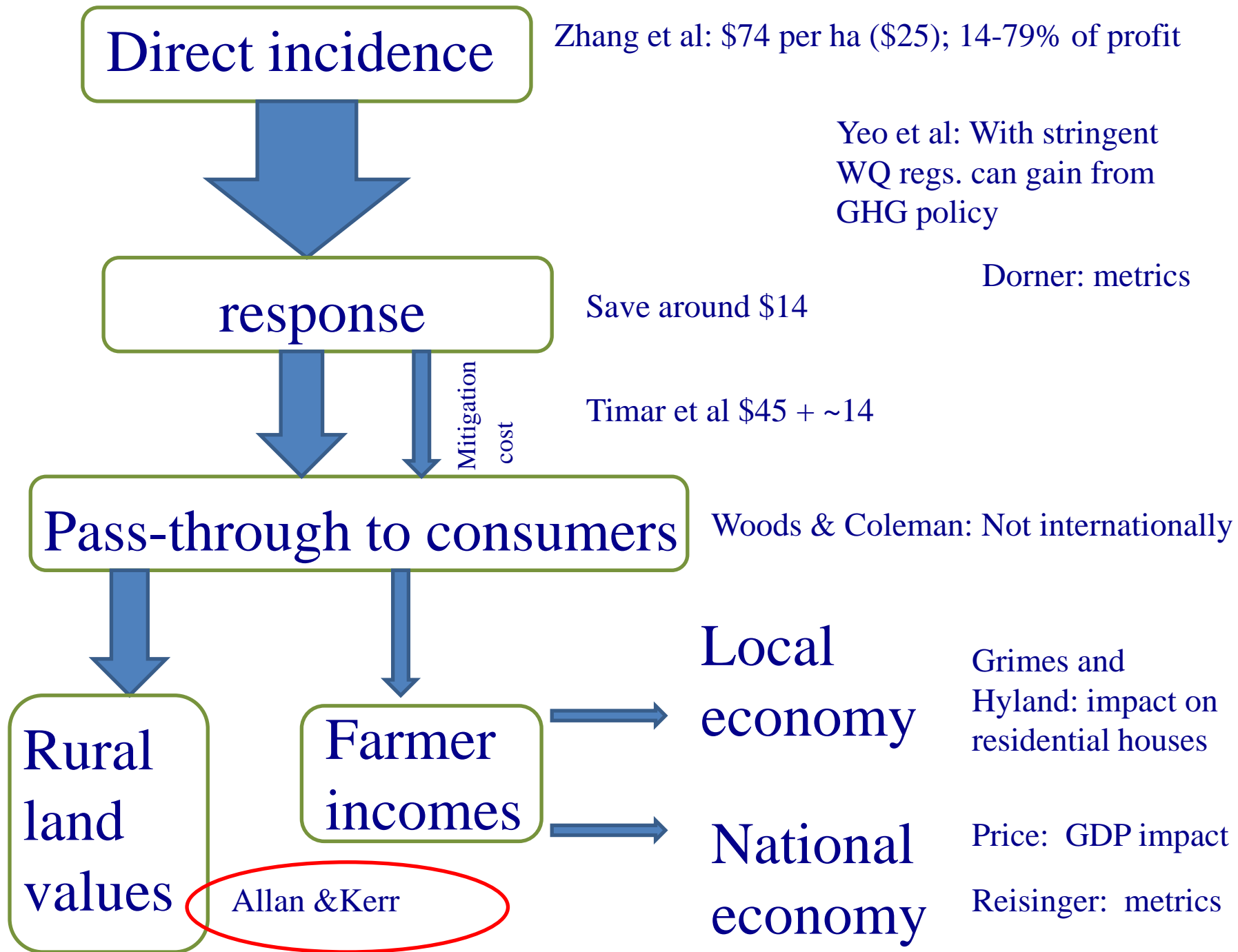
Sheep/beef farmers



Sheep/beef farmers



Sheep/beef farmers



So what? Principles for cost-sharing

Political expediency – and policy stability

Avoid rent seeking – Brower et al

Equity

Equal sharing

Responsibility

Ability to pay



How we can alter cost sharing

Free allocation to owners of land

Retraining assistance for rural workers

Direct support for local communities

Marketing as 'clean green'

Pressure to impose similar costs internationally

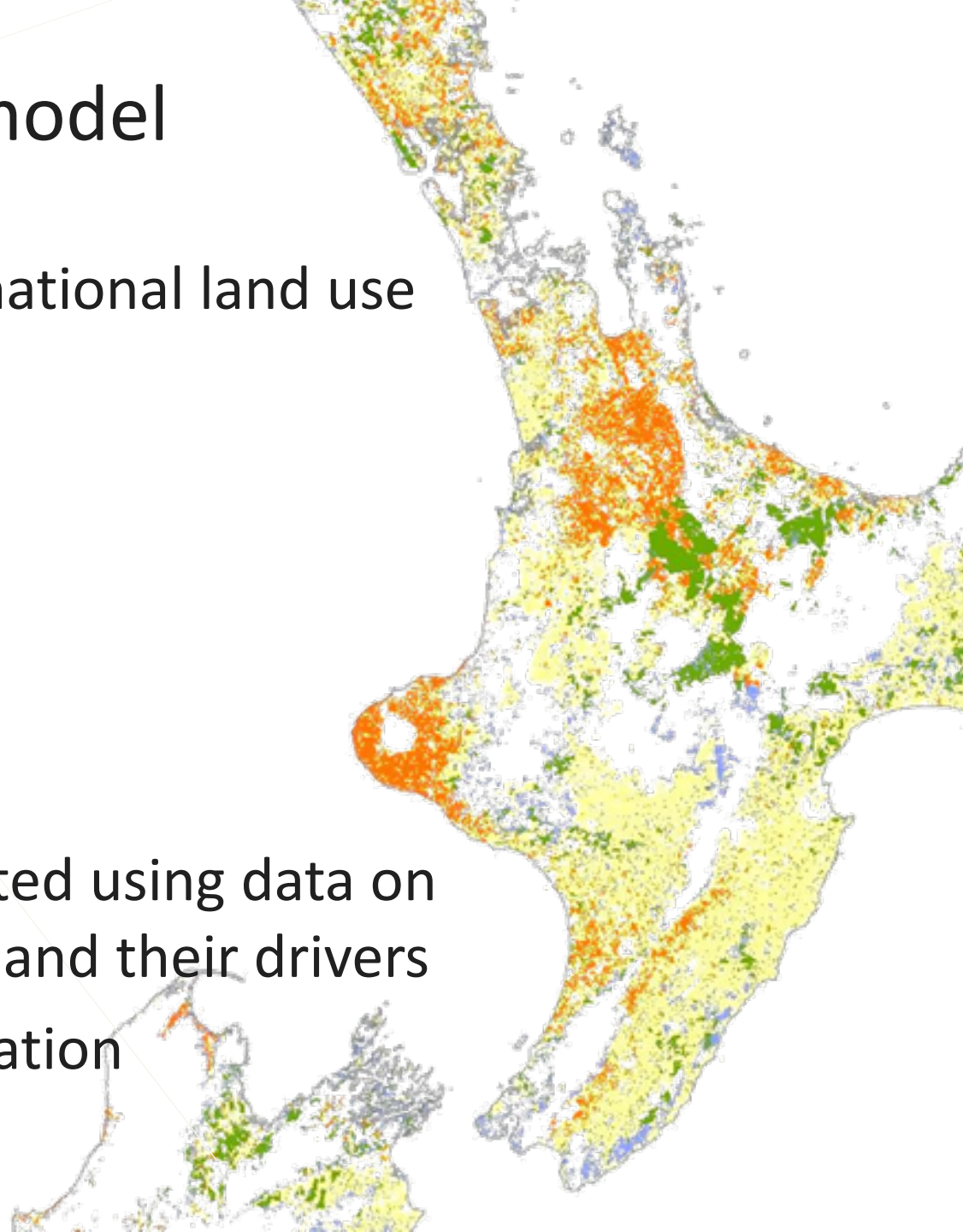
Allocation scenarios

- 1) Grandparenting
past emissions
 - 2) Natural capital-based
potential emissions
(based on LUC class)
- Carbon price \$25
 - Simulations to 2020

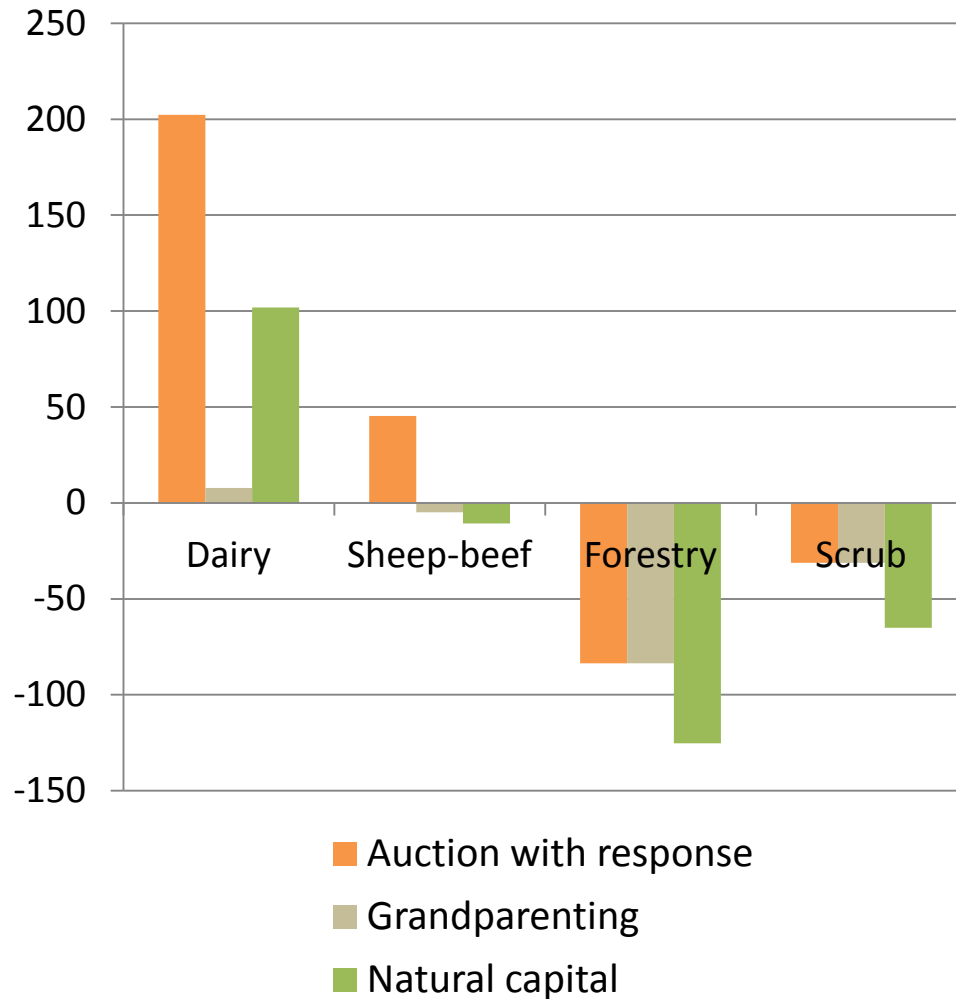


The LURNZ model

- A simulation model of national land use
- Dynamic and spatial
- Four rural sectors
 - dairy farming
 - sheep and beef farming
 - plantation forestry
 - scrub
- Econometrically estimated using data on past land-use decisions and their drivers
- Emissions and sequestration at a fine spatial scale



Cost per hectare (\$)



(+) Carbon liability

(-) Reward for sequestration

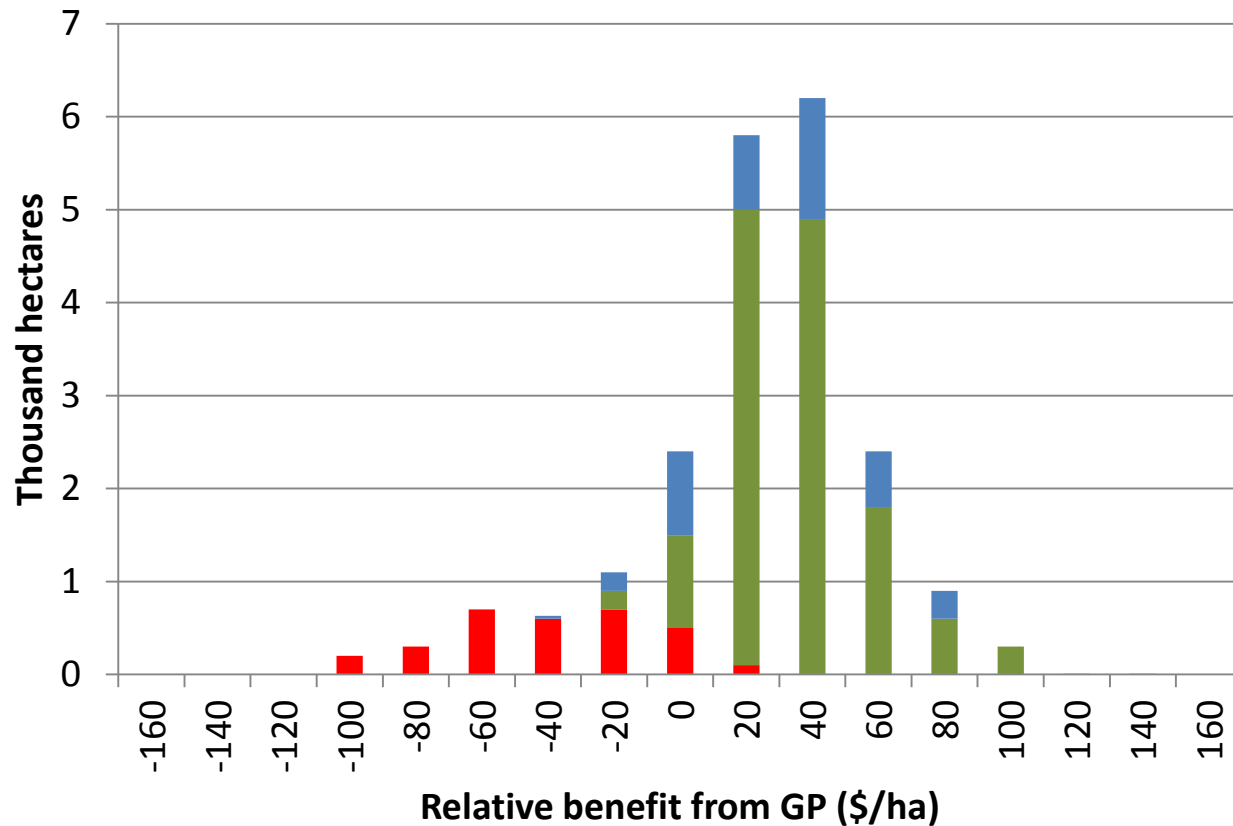
(-) Net benefit of mitigation

(-) Value of free allocation

(+) Cost of land use change

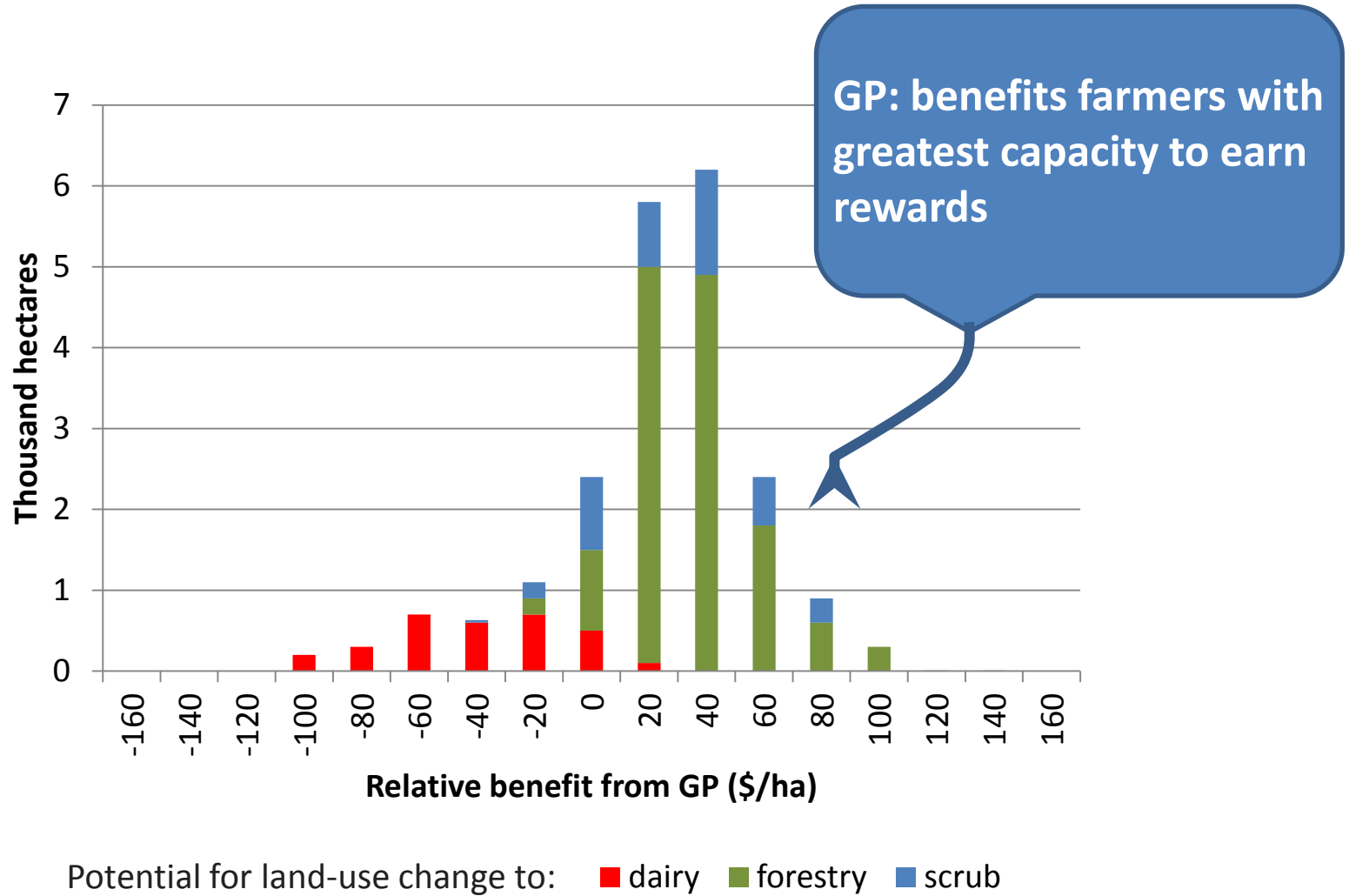


Grandparenting vs. natural capital allocation



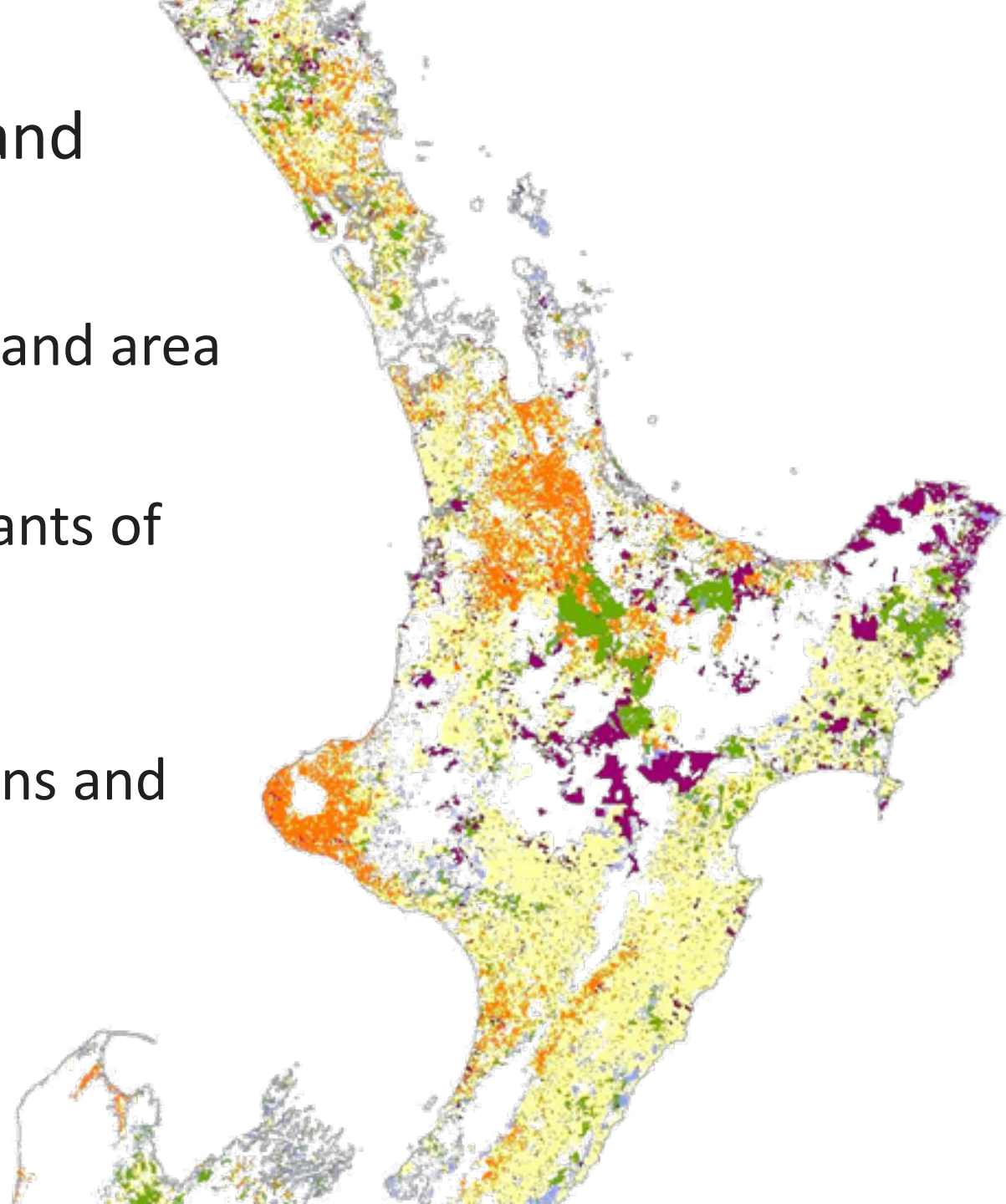
Potential for land-use change to: ■ dairy ■ forestry ■ scrub

Grandparenting vs. natural capital allocation

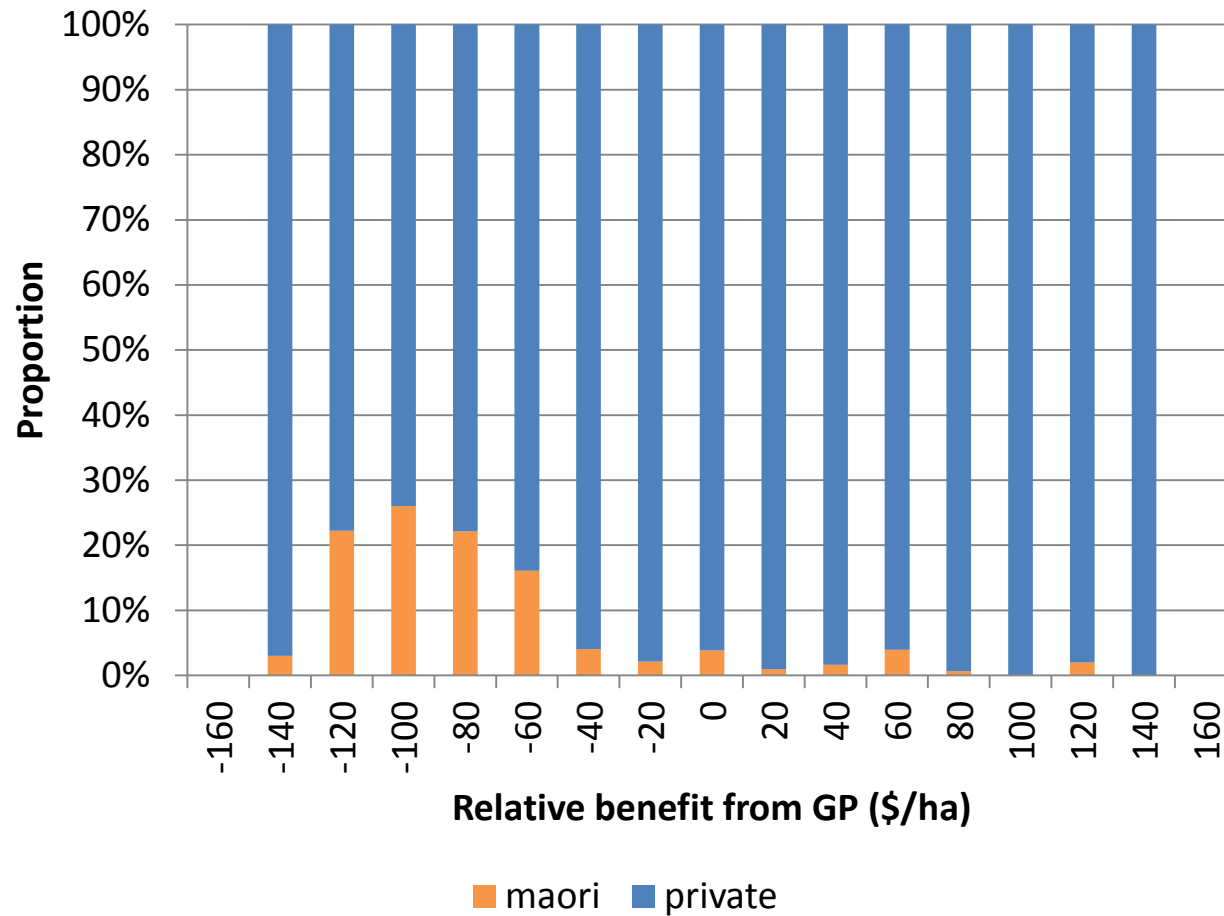


Māori freehold land

- Six percent of NZ's land area
- Low-quality land
- Owned by descendants of original owners
- Multiple owners
- Subject to restrictions and protections



Grandparenting vs. natural capital allocation



Conclusions

- Sector-level impacts may mask large amounts of within-sector heterogeneity
- Under grandparenting relative to the natural capital allocation approach
 - Owners of relatively overdeveloped land are better off
 - Owners of relatively underdeveloped land are worse off
 - Owners of Maori freehold land are worse off
- Grandparenting provides additional benefits to those who already have the greatest capacity to earn rewards for mitigation

